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EXAMINER	
LEE, HWA C	

ART UNIT	PAPER NUMBER
2672	3

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/090,804	OBRADOR, PERE	
	Examiner	Art Unit	
	Hwa C Lee	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 06 March 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claims

1. Whenever appropriate, the examiner's interpretations of the prior art referenced to reject a particular claim is attached enclosed by {}. The corresponding reference for the respective claim rejection is attached enclosed by ().

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-4, 9-10,12-14, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wyman, U.S. Patent Publication No. 2003/0112347 in view of Voss et al., U.S. Patent Publication No. 2003/0147640.

5. In reference to claim 1, Wyman discloses the following limitations:

(a) Wyman discloses the limitation of

"*a method for processing digital video frames and high resolution still images in burst mode, comprising:*" in the following:

- An electronic video camera apparatus temporarily records and saves motion video in a relatively high-resolution form in a frame aging buffer...to extract a relatively high-resolution still image from the buffer (paragraph [0007], lines 1-5). {Since motion video in essence is comparable to a set of still images captured in "burst", this is a disclosure of "burst mode" capturing of still images}.
- The user may select the frame frequency of buffer recording...the frame frequency is the frequency (1/N) of frames that are temporarily stored in buffer. The user may elect to store every frame (i.e., N=1) in buffer (paragraph [0037], lines 3-8). {The user can select the frame frequency and thus able to capture still images in "*burst mode*"}.

(b) Wyman discloses the limitation of

"*storing with high priority the high resolution still images in raw format in a memory during acquisition of the high resolution still images*" in the following:

- Frames stored in buffer are stored in uncompressed format...each pixel in raw data form will require on byte of storage (paragraph [0059], lines 1-4). {Uncompressed format is in "*raw format*"}.

(c) Wyman discloses the limitation of

"*a method for concurrently processing digital video frames and high resolution still images*" in the following:

- If, while recording the motion video, an event occurs which the user would like to capture as a high-resolution, still digital photograph, the user activates a saving function before the buffer has been overwritten (paragraph [0008], lines 11-14). {Simultaneous processing of digital video frames and high resolution still images}.
- The camera records motion video on an appropriate motion video recording medium, at a resolution appropriate for motion video...concurrently, video frames captured by sensor are temporarily held by frame buffer at a higher resolution...appropriate for still images (paragraph [0028], lines 4-10). {Simultaneous processing of digital video frames and high resolution still images}.
- Motion video state is used for recording motion video on media and simultaneously buffering still frames in buffer (paragraph [0035], lines 1-3). {Simultaneous processing of digital video frames and high resolution still images}.

(d) Wyman discloses the limitation of *"processing with low priority the video frames stored in the memory using a video pipeline; and"* in the following:

- The frame is then converted to motion video format and written to the motion video media. Specifically, motion video format implies that the frame is converted to a lower pixel resolution. It may additionally be compressed using any appropriate compression algorithm (paragraph

[0042], lines 9-14). {Converting and compressing the video frames are interpreted as "*processing*" the video frames}.

(e) Wyman discloses the limitation of

"processing with low priority the high resolution still images acquired during the burst mode using a high resolution still image pipeline," in the following:

- Frames are saved by transferring the frame to an external device. This external device...can save, edit, print, and transfer, video images...having still frame recording capability (paragraph [0056], lines 6-13). {Save, edit, print, and transfer are all interpreted as "*processing*" the high resolution still image}.

(f) Wyman discloses the limitations of

" wherein the high resolution still image pipeline runs concurrently with the video pipeline" in the following:

- Still frames are buffered while simultaneously recording motion video (paragraph [0063], lines 1-3). {Both the still image and video are processed in parallel}.

Wyman does not explicitly disclose the limitations of

(g) "*a method for processing digital video frames and high resolution still images in burst mode, comprising:*"

(h) "*acquiring with high priority video frames and high resolution still images in burst mode from one or more image sensors*" in the following:

(i) *"storing with high priority the video frames and the high resolution still images in raw format in a memory during acquisition of the high resolution still images in burst mode"*

(j) "*storing with high priority the high resolution still images in raw format in a memory during acquisition of the high resolution still images*"

(k) *"processing with low priority the high resolution still images acquired during the burst mode using a high resolution still image pipeline"*

Voss et al. discloses the above said limitations (g-k).

(g) Voss et al. discloses the limitations of "*a method for processing digital video frames and high resolution still images in burst mode, comprising:*" in the following:

- The system and method of capturing and embedding high-resolution still images using a digital video recorder (paragraph [0022], lines 4-6). {Method of capturing and embedding...images is interpreted as "*a method for processing digital video frames and high resolution still images*"}
- An application specific integrated circuit, ASIC, executes the burst mode logic...enables the digital camera to enter a "burst", or "print capture" mode of operation (paragraph [0024], lines 5-9). {Burst mode is disclosed).

(h) Voss et al. discloses the limitation of *"acquiring with high priority video frames and high resolution still images in burst mode from one or more image sensors*" in the following:

- The digital camera is a digital video recorder that includes and application specific integrated circuit (ASIC). The ASIC executes the burst mode logic...enables the digital camera to enter a "burst," or "print capture" mode of operation. When in burst mode, the camera captures high-resolution still images. The burst mode of operation can be entered during execution of a normal "video mode" of operation, during which video image data is captured by the digital camera (paragraph [0024], lines 4-13). {Both video capture and high-resolution still image capture in burst mode are performed}.
- One or more high-resolution still image data frames are captured and alternately embedded with the low-resolution video frames into the video data stream (paragraph [0039], lines 12-14). {Both video capture and high-resolution still image capture in burst mode are performed}.

(i) Voss et al. discloses the limitation of *"storing with high priority the video frames and the high resolution still images in raw format in a memory during acquisition of the high resolution still images in burst mode"* in the following:

- When the digital camera is operating in bust mode, the bust mode memory is used to store the captured high-resolution still image data as burst mode data (paragraph [0036], lines 1-3). {The high-resolution still image data is stored without any processing, and thus interpreted as being "*raw format*"}.

- The video data stream includes a plurality of low-resolution video frames and that can be stored on the tape media as video data (paragraph [0037], lines 4-7). {The video data is stored without any processing and thus interpreted as being "*raw format*"}.
- When the digital camera is placed in this "high-resolution burst mode," the image data represented by the still image frames is saved in the burst mode memory (paragraph [0038], lines 4-7). {The high-resolution still image data in burst mode is stored without any processing, and thus interpreted as being "*raw format*"}.

(j) Voss et al. discloses the limitation of "*storing with high priority the high resolution still images in raw format in a memory during acquisition of the high resolution still images*" in the following:

- When in burst mode, the digital camera captures high resolution still image data and transfers this data to the bust mode memory (paragraph [0035], lines 8-10). {The still images are stored without being processed and thus interpreted as being stored in raw format}.

(k) Voss et al. discloses the limitation of *"processing with low priority the high resolution still images acquired during the burst mode using a high resolution still image pipeline,"*

- The analog-to-digital converter converts the analog signal received from the image sensor into a digital signal and provides this digital signal as

image data via connection to the ASIC for image processing (paragraph [0027], lines 4-7}.

It would have been obvious to take the teachings of Wyman and to add the capabilities of burst mode capturing of high resolution still images and separate pipelines for video frames and still images as taught by Voss et al. in order to gain the advantage of being able to capture high resolution still images without losing any video information, and because this allows for a more flexible acquisition of images and to let the user to perform additional operations. Both are captured in real time without sacrificing either format.

6. In reference to claim 2 Wyman in view of Voss et al. discloses all limitations of claim 1 as described above. In addition, Wyman discloses the limitation of "wherein the acquiring step includes acquiring the video frames and the high resolution still images in real time" in the following:

- An electronic video camera apparatus temporarily records and saves motion video in a relatively high-resolution form in a frame aging buffer...to extract a relatively high-resolution still image from the buffer...the camera holds the video frames in high-resolution form a limited time, eventually "aging" them out of the buffer or to a lower resolution form as more motion video is captured (paragraph [0007], lines 1-8). {Video frames are held in the buffer for a limited time because the images are captured and stored in real time. The buffer must be purged to make room for the next real time images}.

- The motion video is continuously saved on a motion video medium...the frame aging buffer contains a series of recently capture frames in high-resolution form, and is therefore constantly being overwritten as new frames are captured (paragraph [0008], lines 1-3). {Continuously saved video means that there are no delays between recordings and since the images are taken from the video, interpreted as acquiring in "*real time*"}.

7. In reference to claim 3, Wyman in view of Voss et al. discloses all limitations of claim 1 as described above. In addition, Wyman discloses the limitation of "wherein the storing step includes storing the video frames and the high resolution still images in real time" in the following:

- An electronic video camera apparatus temporarily records and saves motion video in a relatively high-resolution form in a frame aging buffer...to extract a relatively high-resolution still image from the buffer...the camera holds the video frames in high-resolution form a limited time, eventually "aging" them out of the buffer or to a lower resolution form as more motion video is captured (paragraph [0007], lines 1-8). {Video frames are held in the buffer for a limited time because the images are captured and stored in real time. The buffer must be purged to make room for the next real time images}.
- The motion video is continuously saved on a motion video medium...the frame aging buffer contains a series of recently capture frames in high-resolution form, and is therefore constantly being overwritten as new

frames are captured (paragraph [0008], lines 1-3). {Continuously saved video means that there are no delays between recordings and since the images are taken from the video, interpreted as acquiring in "*real time*"}.

8. In reference to claim 4, Wyman in view of Voss et al. discloses all limitations of claim 1 as described above. In addition, Wyman discloses the limitation of "*further comprising down sampling the high resolution still images to be inputted into the video pipe line* " in the following:

- The frame is then converted to motion video format and written to the motion video media. Specifically, motion video format implies that the frame is converted to a lower pixel resolution (paragraph [0042], lines 9-14). {Converting the frame, the high-resolution still image, to a lower pixel resolution video format is specifically "*down sampling*". Down sampling allows fast and efficient transfer to video format with minimum space requirement}.

9. In reference to claim 8, Wyman in view of Voss et al. discloses all limitations of claim 1 as described above. In addition, Wyman discloses the limitation of "*further comprising compressing the video frames and the high resolution still images* " in the following:

- The frame is then converted to motion video format and written to the motion video media. Specifically, motion video format implies that the frame is converted to a lower pixel resolution. It may additionally be

compressed using any appropriate compression algorithm (paragraph [0042], lines 9-14).

It would have been obvious to someone of ordinary skill in the art to combine the teachings of Wyman and Voss et al. in order to gain the advantages of compressing the video frames and high resolution still images which minimizes memory space requirement for storage.

10. In reference to claim 9, the basis for the claim rejection is the same as described for claim 1 above.

11. In reference to claim 10, the basis for the claim rejection is the same as described for claim 4.

12. In reference to claim 12, the basis for the claim rejection is the same as described for claims 2 and 3.

13. In reference to claim 13, the basis for the claim rejection is the same as described for claim 1.

14. In reference to claim 14, Wyman in view of Voss et al. discloses all limitations of claim 9 as described above. In addition, Wyman and Voss et al. both disclose the limitation of "*wherein the processors are selected from a microprocessor and an application specific integrated circuit (ASIC)*" in the following:

- Wyman: The camera includes a programmable processor in communication with a random access memory (paragraph [0019], lines 3-4). {Wyman describes a method to capture high-resolution still photographs, and thus a programmable processor is a microprocessor}.

- Voss et al: The digital camera is a digital video recorder that includes an application specific integrated circuit (ASIC) (paragraph [0024], lines 4-5).
- Voss et al: Aspects of the invention can be embodied in software that is stored in the internal flash memory and executed by a suitable microprocessor (paragraph [0025], lines 7-9).

Also, the limitation of a digital signal processor (DSP) is well known in the art. Processing a digital image or motion video to adjust the picture quality and or data size involves a use of a digital signal processor. It would have been obvious to take the teachings of Wyman in view of Voss et al. and to add a processor selected from a microprocessor, ASIC, and DSP in order to gain the following advantages:

- The microprocessor controls all functions of the camera.
- ASIC performs specific application as instructed by the microprocessor.
- DSP controls processing of high-resolution still image and motion video.
- Selecting from the above processors improves efficiency since individual processors have specific functions and thus can run in parallel with each other.

15. In reference to claim 17, both Wyman and Voss et al. both disclose "*a computer readable medium providing instructions for concurrently processing digital video frames and high resolution still images in burst mode*" in the following:

- Wyman: The camera includes a programmable processor in communication with a random access memory. Memory contains a control program comprising a plurality of processor executable instructions which,

when executed on processor, control the operation of camera (paragraph [0019], lines 3-8). {Random access memory is a computer readable medium providing the said instructions of claim 17}.

- Voss et al: A "computer –readable medium" can be any means that can contain, store, communicate, propagate, or transport the program for use by or in connection with...device (paragraph [0023], lines 13-16). Aspects of the invention can be embodied in software that is stored in the internal flash memory and executed by a suitable microprocessor (paragraph [0025], lines 7-9).

The remaining limitations of claim 17 are rejected using the same basis described for claim 1 above.

16. In reference to claim 18, the basis for the claim rejection is the same as described for claim 2.

17. In reference to claim 19, the basis for the claim rejection is the same as described for claim 4.

18. Claims 5, 11, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wyman in view of Voss et al. as applied to claims 1-4, 9-10, 12-14, 17-19 above, and further in view of Matsumoto, U.S. Patent Publication No. 2003/0052986. Wyman in view of Voss et al. discloses all limitations of claim 1 as described in paragraph 4 above but does not explicitly disclose the limitation of "*wherein the processing the high resolution still images step includes processing the video frames and high resolution still*

images into a standard format by an image/video transcoding agent" Matsumoto discloses the said limitation in the following:

- The still image codec unit includes a JPEG encoder for generating JPEG still image data by executing a JPEG compression process for still image data obtained by the camera unit and image processing unit (paragraph [0041], lines 1-5). {Still images are processed into a standard, JPEG, format}.
- The moving image codec unit includes an MPEG encoder for generating MPEG moving image data by executing an MPEG compression process for moving image data obtained by the camera unit and image processing unit (paragraph [0042], lines 1-5). {Moving images are processed into a standard, MPEG, format}.

It would have been obvious to someone of ordinary skill in the art to take the teachings of Wyman in view of Voss et al. and add the capability of processing the still images and video frames into standard format in order for the data to be easily recognized and displayed by plurality of display apparatus. This allows the images on video to be accessed and displayed using conventional programs like Adobe © Photoshop and Windows © Media Player, for example.

19. In reference to claim 11, the basis for the claim rejection is the same as described for claim 5.

20. In reference to claim 20, the basis for the claim rejection is the same as described for claim 5.

21. Claims 6-8, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wyman in view of Voss et al. as applied to claims 1-4, 9-10, 12-14, 17-19 above, and further in view of Bittner et al., U.S. Patent No. 6,330,400.

22. In reference to claim 6, Wyman in view of Voss et al. discloses all limitations of claim 1 as described above but does not explicitly disclose the limitation of "*wherein the processing the video frames step comprises: downsampling and demosaicing the video frames; and color correcting the video frames*" though Wyman does disclose the limitation of downsampling as discussed with respect to claim 4 above. Bittner et al. discloses the said limitation in the following:

- The ASIC is structured to perform the desired image processing functions including, but not limited to:
    1. Demosaic;
    2. Color correction, compensation and other image quality improvement;

    .
    .
    .
    7. Image compression

    (col. 10, lines 35-49) {Image compression is "*downsampling*"}.

It would have been obvious to someone of ordinary skill in the art to take the teachings of Wyman in view of Voss et al. and to add a processing step comprising: "*downsampling and demosaicing the video frames; and color correcting the video frames*" in order to gain the following advantages:

- Downsampling allows conversion of the high-resolution images into lower resolution motion video;
- Demosaicing allows true reproduction of original image colors; and
- Color correcting the demosaiced video frames allows color correction based on the original illumination of the image when recorded.

23. In reference to claim 7, Wyman in view of Voss et al. discloses all limitations of claim 1 as described above but does not explicitly disclose the limitation of "*wherein the processing the high resolution still images step comprises: downsampling and demosaicing the high resolution still images using complex demosaicing algorithms; and color correcting the high resolution still images using complex color correction algorithms*". Bittner et al. discloses the said limitation as described in claim 6 (col. 10, lines 35-49). The motivation for combining the prior arts is also the same as stated for claim 6.

24. In reference to claim 8, Wyman in view of Voss et al. discloses all limitations of claim 1 as described above but does not explicitly disclose the limitations of "*further comprising compressing the video frames and the high resolution still images*". Bittner et al. discloses the said limitation as described in claim 6 and 7 above (col. 10, line 49).

25. It would have been obvious to someone of ordinary skill in the art to take the teachings of Wyman in view of Voss et al. and to add data compression in order to save memory space.

26. In reference to claim 15, the basis for the claim rejection is the same as described for claim 6.

27. In reference to claim 16, the basis for the claim rejection is the same as described for claim 7.

Conclusion

28. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following prior arts disclose the limitation of color interpolation, color correction, and image demosaicing.

U.S. Patent Publication No.	Inventor(s)
2003/0021474	Hunter, Andrew Arthur
2003/0052981	Kakarala, Ramakrishna et al.
2003/0048279	Kok, Chi Wah et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hwa C Lee whose telephone number is 703-305-8987. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on 703-305-3885. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9700.

Hwa C Lee
Examiner
Art Unit 2672

HCL

JOSEPH MANCUSO
PRIMARY EXAMINER